25 May 1970

TEXT STREAM PROCESSING: DRAFTING, EDITING AND PRINTING

The term "text stream processing" is used to describe the integrated sequence of computer-aided operations performed on ordinary textual material to get it in finished form. It usually begins with the preparation of a rough draft, carries through editing, and ends with the final product, either in finished copy or printed form. Increasing demands for speed and flexibility in carrying text from first draft to final printed page have resulted in the marriage of computers and automatic photo composing machines. Figure I illustrates various steps and alternative paths in this process, and where the computer and photo typesetter can fit in the overall flow.

In particular, once the draft material is converted to digital form on magnetic tape or disk it becomes feasible to use computers to do line justification, pagination, etc. The original manuscript, which is normally paragraphs of copy in rough draft, is marked up by the author or editor to indicate the format desired and any changes, insertions, deletions, etc. The use of appropriate language commands permits great flexibility in page and point size, width, footnotes, headings, etc. All the editorial changes and instructions are fed back into the computer which then inserts the corrections, recomposes and renumbers the pages, and makes other required changes as the text flows from page to

SECRET

page. The final output from the computer is a magnetic or
perforated paper tape which is used to drive the photo composer.

So much of the effort in intelligence production goes into
assembling, editing, and issuing printed material that it is
not surprising to find that a text editing program has been
used (SCRIPT), one computer-assisted page composing system is
fully operational, and at least one significant developmental
STATSPEC
effort in automated handling of copy is underway ▮▮▮▮▮▮▮   STATSPEC

▮▮▮▮▮▮

Text Editing Program (SCRIPT)

SCRIPT is a fairly straightforward program which allows
the operator to change and manipulate his text in a number of
standard ways. It is little different from commercially available
services. The user merely types in his text, and can then edit,
justify, paginate, etc. On demand, the computer will type out
the finished product. The system, though operational, has not
been used widely in the preparation of reports.

Computer-Assisted Page Composing System (EPIC)

This is a very sophisticated system which can produce high
quality photo typesetting, including hyphenless justification.
It is currently fully operational and being used by OBGI and PSD
to prepare for printing the National Intelligence Survey text,
and by the Supply Division in the Office of Logistics (DDS) to
prepare certain catalogs.

SECRET

SECRET

The input to the system consists of fully edited and corrected MTST tapes, (see Figure 2). The editorial changes, deletions, insertions, etc., are prepared on MTST machines by OBGI and delivered as clean tapes on PSD. Changes and corrections are possible (and are often made) once the text enters the EPIC system, but clearly the fewer changes made, the faster the whole process. Authors do not normally receive intermediate EPIC outputs for review - it is assumed they have approved the content of the MTST tapes.

The MTST tapes are translated to computer readable tapes and autoformatted in what is referred to as a Phase Zero run on OCS's IBM 360. The output tapes are then subjected to Phase I programs, which basically create justified indexed records in a master file which is updatable, and prints line proofs on a 1403. Proofs are reviewed and any corrections re-run. On the average there are two updates per job.

With a clean Phase I output, in Phase II and III runs page arrangements of text are performed, columns allocated, etc., and a punched paper control tape produced which drives a Photon 713 photo composer to prepare a negative ready for offset-press.

The EPIC system is a sophisticated automatic photo-composing system which produces very high quality work, and is clearly only to be used where the expense is warranted.

A much simpler version is also operational, and referred to as the 713 Galley System. Here, MTST tapes are converted by

SECRET

Digidata equipment to a punched paper tape with instruction codes to drive a Photon 713 photo composer. Justified output on photographic paper can be "cut-up" and returned to camera for photo-offset.

The over-simplified descriptions above conceal the complexity and the practical problems which arise in text stream processing. EPIC, for example, is only one part in the whole process. Perhaps an even more important part of the system is that which produces the clean input tapes to EPIC with a minimum of trouble.

Undoubtedly there are a number of activities in the intelligence production function which could benefit from either SCRIPT-like or EPIC-like (or both) systems. Sometimes economies of scale make feasible the introduction of computer-aided text stream processing in several applications whereas one alone might not. Other times side benefits, such as the preparation of a microfilm for reference or archival storage, or faster production with greater flexibility for change, makes the adoption of new systems desirable.

STATSPEC

STATSPEC

STATSPEC

SECRET

STATSPEC

STATSPEC

██

STATSPEC ██ Clearly this

— activity involves much handling of copy and a great deal of

typing.

STATSPEC ████ has been examining for some time the possibility of

automating this function, and their present plans are described

STATSPEC
in ████ Automation Planning, 2 April 1970. In essence, following

STATSPEC
conversion to the AUTODIN communications system, ████ plans to

conduct an experiment in automated copy handling using the

STATSPEC
material filed by the █████████████████ The text received via

AUTODIN will cut a paper tape and prepare a draft hard copy for

review and editing. Mats will then be cut from the punched paper

tape on Dura equipment, with operator manual intervention to

insert corrections. These mats will then go to camera to prepare

the printing plates. Subsequent phases in the automation program

call for a computer-aided system, but they are not yet firmed up

and will not take place until 1972-1974.

The operational status of SCRIPT, EPIC, and the 713 Galley

System suggests that the technical know-how and experience exists

within the Agency to move ahead at a faster pace with a more

STATSPEC
integrated computer-aided text stream processing system for the

██████████████████.

The initial capture of the text in machine readable form

will greatly simplify the editing function and allow the elimination

of punched paper tape and mat cutting as steps in the overall

SECRET

-5-

composing process. Editors can (and probably should) continue to work with hard copy print-out but this would be merely a print-out of the original input or of some intermediate stage in the process. Changes and corrections could then be introduced with great flexibility, and the output could then go directly, after suitable processing, to a high speed phototypesetter. A   STATSPEC microfilm output of the ███████ for the record could be an automatic by-product of the photo composing machine.

While economies may not be possible (or at the most slight) in the printing process which follows the cutting of the mats under the present system, it is almost a certainty that costs can be cut in the preparation of the textual material. But more   STATSPEC importantly, the availability of the ███████ in computer readable tapes would make feasible the use of automated techniques for retrospective text searches and the possible creation of computerized propaganda theme files.

Recommendations

Text stream processing undoubtedly can find wide applicability in DDI, and the Agency as a whole, provided that system designs can be kept fairly simple and that development efforts be useful to several activities.

In view of the previous discussion:

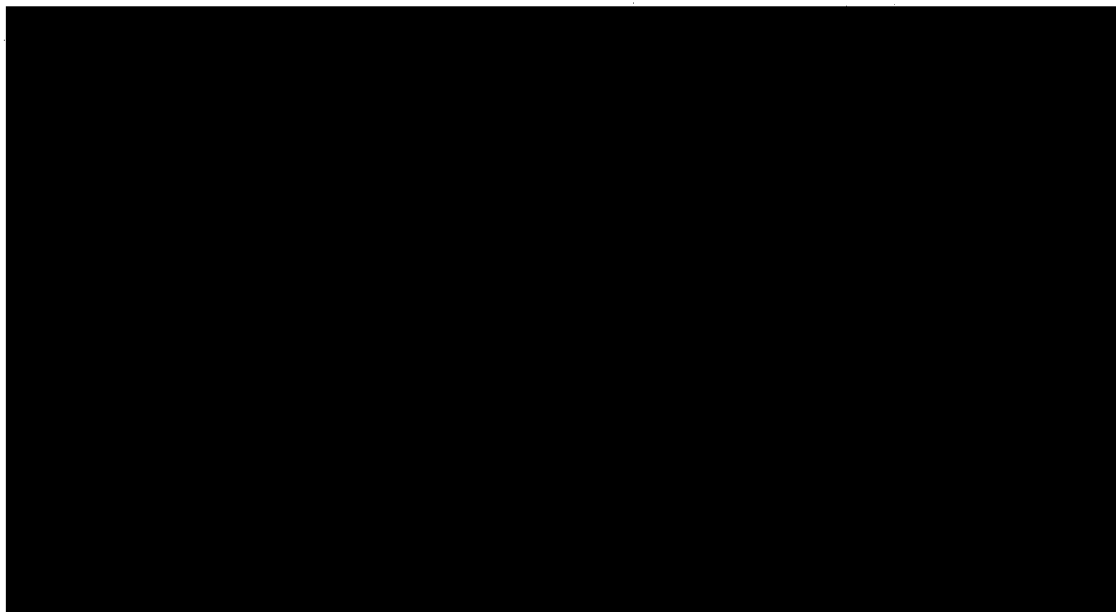(1) A small task force ought to be assembled and assigned the responsibility of obtaining a more detailed

overview (than is appropriate under the ASPIN
Project), uncovering and classifying in terms
of characteristics, requirements and priorities,
those activities which could benefit from text
stream processing, and the composing process.
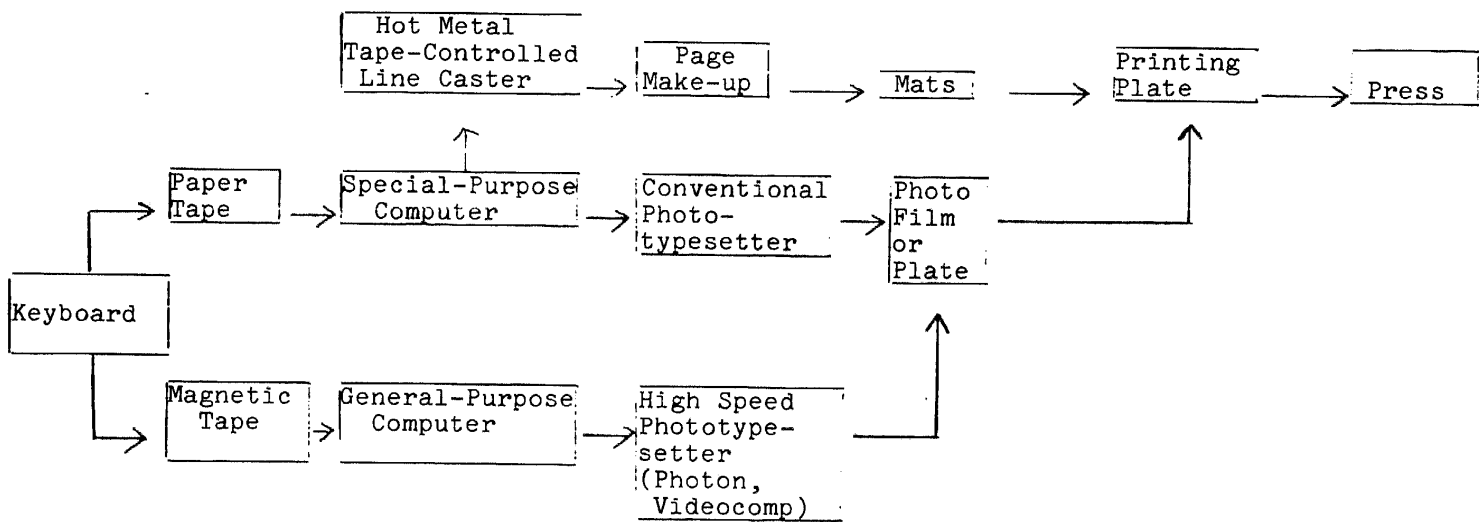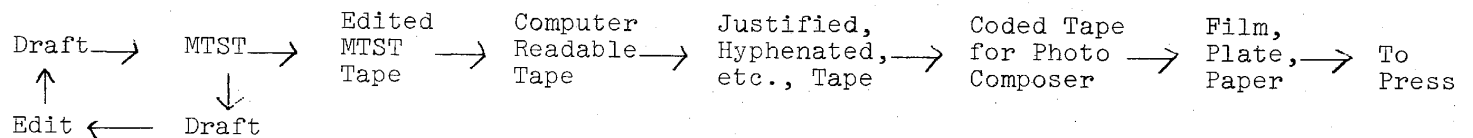
STATSPEC

25X1A

FIGURE 1

THE COMPOSING PROCESS

| Hot Metal Tape-Controlled Line Caster | → | Page Make-up | → | Mats | → | Printing Plate | → | Press |

Keyboard → Paper Tape → Special-Purpose Computer → (up to Hot Metal Tape-Controlled Line Caster)

Special-Purpose Computer → Conventional Photo-typesetter → Photo Film or Plate → Printing Plate

Keyboard → Magnetic Tape → General-Purpose Computer → High Speed Phototype-setter (Photon, Videocomp) → Photo Film or Plate

-8-

SECRET

SECRET

FIGURE 2

EXAMPLE OF FLOW IN LINE TEXT PROCESSING

Draft⟶ MTST⟶ Edited ⟶ Computer ⟶ Justified, ⟶ Coded Tape ⟶ Film, ⟶ To
↑   MTST   Readable   Hyphenated,   for Photo   Plate,   Press
Edit ⟵ Draft Tape   Tape   etc., Tape   Composer   Paper

SECRET

MONITORING, FILE PROCESSING AND COMPUTATIONAL

SUPPORT TO MISSILE AND SPACE RELATED SYSTEMS